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ABSTRACT

This report describes a program for improving the completion of homework assignments in a seventh-grade mathematics classroom in a large middle school in Rockford (Illinois). The problem of missing homework was noted by the mathematics teacher and confirmed by the other teachers on the seventh-grade team. Analysis of the probable-cause data revealed that although students expressed a desire to do well in school, they often lacked the behaviors to achieve that success. Solution strategies, suggested by the literature and confirmed by other teachers working on the team, involved guiding the students to take more responsibility for their schoolwork. A grade control chart (GCC) was chosen as a tool to help students track their progress on daily homework completion and set goals for desired performance. The resulting graph provided a visual reminder of progress. The students also kept a journal to establish the relevance of the lesson and to encourage self-assessment. This intervention was not successful in raising the overall homework-completion rate of the target class. However, many individual students appear to have benefitted from the project as indicated by their individual completion rates and their journal entries. Appendixes include team, parent, and student questionnaires; a sample of the GCC; and baseline statistics. (Contains 40 references.) (GLR)

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ED 374 175

# MOTIVATING STUDENTS TO COMPLETE HOMEWORK

by

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requirements for the degree of
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**Abstract**

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DATE: April, 1994

TITLE: Motivating Students to Complete Homework

ABSTRACT: This report describes a program for improving the completion of homework assignments in a seventh grade mathematics classroom in a large middle school in a medium sized midwestern city. This urban school district is currently undergoing changes as part of a desegregation lawsuit. Much attention is being given to increasing student success rates. The problem of missing homework was noted by the mathematics teacher and confirmed by the other teachers on the seventh grade team.

Analysis of the probable cause data revealed that although students expressed a desire to do well in school, they often lacked the behaviors to achieve that success. Some students did not see a connection between homework completion and subsequent performance on mathematics tests. Some students did not seem to own responsibility for the grade they received in math class.

Solution strategies, suggested by the literature and confirmed by other teachers working on the team, involved guiding the students to take more responsibility for their schoolwork. The Grade Control Chart (GCC) was chosen as a tool to help students track their progress on daily homework and set goals for desired performance. The resulting graph provided a visual reminder of progress. The students also kept a journal in order to establish the relevance of the lesson and to encourage self-assessment.

This intervention was not successful in raising the overall homework completion rate of the target class. However, many individual students appear to have benefited from the project as noted from their individual completion rates and from their journal entries. This intervention is recommended, with modifications, as part of an overall program to encourage students to complete homework.

# Chapter 1

## STATEMENT OF PROBLEM AND DESCRIPTION OF CONTEXT

### Problem Statement

Many students in seventh grade math class do not complete their daily homework assignments as evidenced by the omission of 24 percent of the daily scores in the gradebook. Some students fail to see a connection between the need for daily practice and their performance on math tests. Some of these students habitually come to class without materials, thus projecting a "non-worker" image to others.

### Description of Immediate Problem Setting

The class being studied is a heterogeneous seventh grade math class at Flinn Middle School in Rockford, Illinois. The class period begins with the grading of the previous day's assignment, followed by a lesson or activity. The activities are often done in pairs or in cooperative groups. When possible, manipulatives are used. The last ten minutes of the period are allotted for students to begin the daily assignment which will be completed at home. Students use a pre-algebra textbook. To challenge the higher ability students, enrichment lessons are assigned on some days for anyone who wishes to try them.

There are 25 students in the third hour class. The students are 11 to 14 years old with an average age of 12.8. The students enter Flinn Middle School from eleven K-6 feeder schools.

Flinn Middle School is a well-maintained building approximately 30 years old. The building has in the past served as a high school and as a junior high. Currently the school houses 990 seventh and eighth graders. Their ethnic background is 72.4 percent White, 19.8 percent Black, 6.4 percent Hispanic, 1.1 percent Asian/Pacific Islander, and 0.3 percent Native American (Flinn Report Card, 1992).

The school contains 25.4 percent students who are considered "low income." The attendance rate for the school is 91.5 percent. The student mobility rate is 16.2 percent. This figure indicates the portion of students who enter or leave the school during the school year. Ten point two percent of the students are classified as "chronic truants" (Flinn Report Card, 1992).

For the past three years, Flinn Middle School has been making the transition from a junior high to a middle school. The school is organized into seven teams. Each team consists of about 135 students. The students share the same five core teachers for math, English, social studies, science, and physical education. The team of five teachers meets regularly to discuss student problems, plan field trips, confer with parents, and coordinate special events. Some teams are beginning to work on interdisciplinary units.

Description of Surrounding Community

Rockford is located in north-central Illinois, 75 miles west of Chicago. It is Illinois' second largest city, covering a 50 square mile area, with a population of about 140,000. Rockford is a manufacturing community with employment high in the areas of machining, metalworking, and transportation equipment (Rockford, Illinois Facts, 1992). The public school system enrolls 28,045 (Trapp, 1992).

The schools in Rockford have been experiencing changes in recent years. Flinn Middle School is not the only school moving to the middle school concept. These changes are also taking place at the other three middle schools in the city. The four middle schools have been involved in the state-wide movement to create more child-centered classrooms. Rockford has been influenced by the leadership of the Association of Illinois Middle Schools (AIMS). Concerned about the disturbing issues raised in the Carneige report, "A Nation at Risk," the AIMS organization has led a campaign to make middle-level education more sensitive to the changing needs of the pre-adolescent.

In addition to the problems experienced by middle schools state-wide, the Rockford middle schools have been further impacted by dramatic changes locally. In the spring of 1989, in a massive cost-cutting program, the Rockford Board of Education closed a number of elementary schools and trimmed the number of middle schools from five to four. As part of the shuffle, two middle schools were closed and one large middle school opened at a different site. As a

result, many students were bussed to locations further away from their homes. Many students began attending buildings that their older siblings had not attended. Some students reported feeling lost or unhappy in their new settings.

An additional decision complicated this situation. The school board, citing the dwindling high school population as justification, voted to close one of the city's five high schools. They chose Rockford's West High School, a naturally integrated school with deep traditions in the west side of the city.

A citizens' organization was created to protest these changes. The group, which called itself "People Who Care," claimed that the burden of these changes fell heavily on the black community. In fact, the group contended, the district had been discriminating against its minority and poorer students for years. The result has been a massive desegregation lawsuit which has resulted in constant scrutiny over all aspects of the district operations.

One item currently under the microscope is the success rate of students in key areas including math. Failure rates and standardized test scores are noted with a breakdown of "majority" and "minority" students. Outside consultants are suggesting that separate honors classes be eliminated at the middle school. Math teachers are finding increased pressure to see that all students get involved in the educational process and that none be allowed to fall into the pattern of not working in the classroom.

Regional and National Context of the Problem

The National Middle School Association has been leading a movement for middle school reforms. Nationally-known speakers have been obtained by the state association for workshops and conferences throughout Illinois in recent years. In addition to such issues as teaming and cooperative learning, homework has begun to be addressed.

An all-day workshop was presented by the Association of Illinois Middle Schools for Illinois educators in the spring of 1993. Neila A. Connors, a professor of middle grade education at Valdosta State College, Valdosta, Georgia, was the featured speaker. Her book, Homework; A New Direction, has been published by the National Middle School Association and has been circulating among local middle school educators. Connors defines homework as "work assigned to students during class and completed outside of the class where it was assigned." (Connors, 1991 p.2).

Homework can be classified into four categories. Practice assignments stress specific skills. This is the type of homework most often used in a mathematics classroom. Preparation homework helps students prepare for upcoming lessons. This might be the reading of a chapter in the textbook. Extension homework asks students to transfer knowledge to new situations. Creative homework assignments may take several days or weeks to complete since students are asked to integrate knowledge (Foyle and Bailey, 1986B).

Although homework is an assumed fact of life in most American schools, not all educators agree on its merit. The

survey of literature on the topic of homework reveals controversy over whether homework should even exist. Some researchers feel that students can only deal with a certain amount of schoolwork. Boredom and satiation can be the results of homework (Cooper, 1989).

Some critics say that homework can interfere with beneficial activities. Twelve-year-olds need athletics, scouts, church, and family time as well as academics. These endeavors help pre-adolescents mature and develop. Important lessons are learned from such involvements (Cooper, 1989). Homework competes with these other things for the limited time that students have available to them.

Parental involvement may not always be helpful. Some students are confused by conflicting teaching techniques. Arguments concerning homework can develop in a household, placing additional stress on parent-child relationships. Cheating can be another drawback to homework. Students who are not motivated to complete work or who feel time constraints may resort to copying from classmates. Not only are students not learning in this case, they are acquiring poor character traits (Cooper, 1989).

Not all homes are conducive to study. Children from poorer homes may not have a quiet, well-lit place to study. Responsibilities for younger children may be placed upon them. Homework could, in these cases, exaggerate the differences between the social classes (Cooper, 1989).

Despite these objections, the proponents contend that the positive effects of homework outweigh these drawbacks.

One assertion is that homework increases achievement. Since "time on task" is a key factor in learning, homework extends the school day (Walberg, 1985). In an era of tough financial times, districts can "increase" the length of the school day without increasing expenses. Homework is free. Classroom time can be used more efficiently for instruction and activities. Independent work can be completed outside of the classroom.

In fact, it is this very aspect of independence that is viewed by some to be the real value of homework. Students will be receiving demanding assignments later on in high school and college. The middle grades can be a time to learn the discipline and responsibility that will be needed throughout life (Connors, 1991). Homework can improve the students' study skills and foster responsibility (Cooper, 1989).

Another benefit of homework is that it gives parents insight into what their children are learning (Turvey, 1986). Homework can start a dialogue between parents and their children about the school day. Homework gives parents "a window on their children's schoolwork which can then lead to discussions with the teacher." (Featherstone, 1985 p.7). Foyle and Bailey (1986A) refer to homework as a "public relations package."

Data are available in the research literature to support one view or another. Despite a lack of consensus, the literature reveals an inclination in favor of homework especially when certain favorable conditions are met. The

extensive research by Paschal, Weinstein, and Walberg compares groups that receive homework to groups that do not receive homework. These studies unequivocally favor homework. Homework does appear to benefit learning, "especially if graded and commented upon." (Paschal, 1984 p.104).

Perhaps the most intriguing argument in favor of homework is that there exists an "overriding perception among educators, parents, and even students that homework does help students perform better in school." (Singh, 1987 p.14). Communities have come to expect homework and feel that the school is not performing its job if homework is not given. One researcher has called this expectation "the most powerful argument for homework." (Pendergrass, 1985 p.310).

The majority of the research favors homework. Teachers, parents, and students have come to expect it. Homework will continue to be a part of the American educational scene. It follows that we should strive to make the homework experience as effective as possible.

## Chapter 2

## PROBLEM BACKGROUND AND PROBABLE CAUSE

### Problem Background

Homework has been around since the seventeenth century when students were required to recite to their parents what they had learned during the school day. Homework became more common in the eighteenth century as it became viewed as vital to the students' learning. In the nineteenth century, the mind was considered to be a muscle which needed exercise. Homework drills were seen as necessary (Connors, 1991).

The twentieth century has witnessed several shifts in attitude toward homework. During the 1940's, the emphasis shifted away from the drill of the previous era toward problem solving. Homework was not as popular during this period. However, the launch of Sputnik by the Russians in the 1950's resulted in a swing toward a more demanding school day which included homework. The turbulent 1960's stressed personal growth and fulfillment. Homework was seen as adding unnecessary pressure on students (Cooper, 1989).

The current round of homework discussion resulted from the report A Nation At Risk, published in 1983. The report attacked high schools for low standards and recommended that

high school students receive far more homework. Middle schools were caught up in this movement to more homework.

Locally, the Rockford School District does not have a set homework policy. Conversations with principals and knowledgeable others in the system did not reveal any information that indicated that the district as a whole had ever officially addressed the issue of homework. The Middle School Handbook, distributed to seventh graders at the start of the school year, does not contain any specific homework guidelines.

The target group of seventh graders in this study is taught by a five-person team of teachers. This team hands out a two page information sheet in addition to the middle school handbook. This team document states that homework will be given daily. When the team teachers meet with parents for conferences, they frequently mention that the students should be doing about an hour of homework each evening. The counselor assigned to the team also delivers this same message so that parents and students are aware of team expectations.

Problem Evidence

Although it has been the team's policy to assign regular homework, many students do not complete the assignments. This was first discussed at team meetings when it was discovered that some students were not completing homework in more than one class. These students often received failing grades in these classes.

An examination of the math teacher's gradebook for the third hour class revealed that zeros had been recorded 24 percent of the time during a seven week period. (Table 1) It was also noted that the zeros were not distributed evenly among the 25 students. Many students completed homework 100 percent of the time, well above the 76 percent level representative of the class as a whole. Other students were chronic in not completing their math assignments. (Table 2)

Table 1

Homework Assignments Received From Total Class
September 13-October 29, 1993

| | |
|---|---|
| Possible Assignments | 675 |
| Assignments Received | 513 |
| Percent of Assignments Received | 76% |

Table 2

Number of Students Completing Homework Assignments
September 13-October 29, 1993

| | |
|---|---|
| Completed 85-100% of Assignments | 14 Students |
| Completed 70-84% of Assignments | 3 Students |
| Completed less than 70% of Assignments | 8 Students |
| | N=25 Students |

Probable Causes of Problem

Data to indicate probable causes of the non-completion of homework were gathered from three sources within the setting: teachers, parents, and the students themselves. Questionnaires were administered to these three groups to assess attitudes, practices, and expectations concerning

homework. Also, the three groups were asked to give reasons for missing homework.

The team questionnaire (Appendix A) revealed that the four academic teachers on the team agreed that an hour of homework was appropriate for seventh graders. The teachers indicated that "lack of motivation" was the greatest reason for the omission of homework. The group felt that a team homework policy was needed for the handling of late work and came to a consensus on how to handle it in the future.

During the intervention period, a "Parent Homework Questionnaire" (Appendix B) was mailed to the homes of the 25 students in the target class. Eleven of these questionnaires were returned in the self-addressed, stamped envelopes that were provided. Seven of the eleven parents felt the students should be receiving regular homework at this grade level. The other four said homework was acceptable when needed. Most suggested 60-90 minutes as an appropriate amount of homework for a given night.

Of particular interest to the researcher was the question, "What are some reasons why your child might fail to turn in homework?" One parent said that the work was too hard and the child did not understand the assignments. Three parents reported time problems such as conflicting activities or too much homework for one night. Seven parents gave responses that reflected lack of responsibility and maturity on the part of the child. Words such as "forgetful," "unorganized," and "absent-minded" were used by the parents to describe their children.

The student questionnaire (Appendix C) was administered during mathematics class on November 1, 1993 on the same day that the intervention activity was explained to the target class. When asked, "How much time do you spend on homework on an average day for all your classes?," the most common response was 30-45 minutes. (Table 3) This is less than the team goal of 60 minutes and less than the parental expectation of 60-90 minutes.

Table 3

Amount of Time Spent on Homework Daily
as Reported by the Students

| | |
|---|---|
| 20 minutes or less | 4 Students |
| 30-45 minutes | 8 Students |
| 60-90 minutes | 5 Students |
| over 90 minutes | 3 Students |
| | N=20 Students |

Of special relevance to this research project was the question, "Think about those days when you have come to class without your homework? Why didn't you do it?" Three students gave answers that could be summarized as "conflicting activities." Fourteen used either the word "lost" or "forgot" to explain the omission. These responses were similar to the parental responses to this question.

Probable cause data from the literature can be divided into five general categories. 1) One set of probable causes deals with the nature of the assignments themselves. These factors are within the power of the teacher to modify. 2) The second group of causes concerns lack of

cooperation among district teachers. Inconsistency in the handling of homework is confusing to some students. 3) A third set of reasons for not completing homework concern issues within the home setting. These factors may seem out of a teacher's control. 4) A fourth set of factors looks at the characteristics of the students themselves. What traits of a twelve-year-old might effect homework? 5) A fifth reason for poor homework performance may be the ineffective handling of the completed assignments by the classroom teacher. Does the student feel the effort was rewarded?

Connors states that many students do not do homework "simply because assignments are often meaningless and boring." (Connors, 1991 p.77). Sometimes students do not see the relevance of the homework (Turvey, 1986). An assignment may be too long to be completed. One author cites a case of a middle school student who had been assigned 18 compound interest problems, although one or two problems would be sufficient to learn the process. Two hours were needed to complete such an assignment (Weber, 1984). One researcher writes that "homework overload can be more harmful than no homework." (Pearman, 1987 p.44).

Sometimes students at middle school have too much homework not because of <u>one</u> long assignment but because several teachers have assigned homework on the same night. Lack of planning and absence of guidelines among teachers within a district, school, or team can contribute to failure to complete homework (Connors, 1991). Also, if team

teachers have differing procedures for checking, grading, and collecting of papers, seventh graders are uncertain of the procedures. And what about late work? Does the team give the same message? Absence of a clear homework policy is cited frequently in the literature as a probable cause of homework problems.

Factors in the home can affect homework performance. Families today have busy schedules and homework competes with other activities on the family agenda. Some parents see homework as an intrusion on family life (Parkhurst, 1989). In other homes, parents are working when students come home from school. One third of elementary students return to an empty house (McCormick, 1990). Television offers an easy alternative to homework for filling the evening hours. One study reports that teenagers average 3.1 hours of daily television viewing (Searls, 1985). Lack of parental supervision and support for homework can result in non-compliance on the part of students.

Some of the reasons for unfinished homework can be attributed to characteristics within the seventh grade student. Many twelve-year-olds are immature and possess poor organizational skills. It is not only the homework that is neglected. These students also forget their lunch tickets, their gym clothes, and their field trip permission slips. Seventh graders are experiencing an adjustment from elementary school. Seven teachers are now seen in the school day. Possessions are kept in hall lockers, not in a personal desk in the classroom. Most students adapt quickly

to the new routine. But some students continue to be overwhelmed by the new procedures.

Another factor which affects homework compliance is the way in which the completed homework is handled in the classroom. If homework is not consistently graded or collected, the message is given that it is not really a very important part of the class. One researcher reports that lack of teacher feedback on homework occurs in over two-thirds of classes (Palardy, 1988). If students do not feel that they will be held accountable for the homework, many will stop working.

In summary, some seventh grade students do not complete homework because assignments are not clear, appropriate, or meaningful. Lack of a homework policy among teachers also contributes to homework problems. Home conditions may not be conducive to studying. The seventh grader may not possess the organizational skills and maturity to manage homework. And finally, the assignments may not be handled effectively when they <u>are</u> completed by students.

Chapter 3

THE SOLUTION STRATEGY

Review of the Literature

The probable causes for seventh graders not completing homework are: inappropriateness of the assignment, lack of a homework policy, unfavorable factors in the home, characteristics of the pre-adolescent, and lack of meaningful follow-up. These issues have been addressed in the educational literature and solutions have been offered.

**Homework assignments should be clear and meaningful.** The teacher should state the purpose of each assignment. Work that is viewed as "busy work" has no place on the agenda (Jongsma, 1985). Students may need a demonstration on how to complete the work. Canter (1988) suggests a series of lessons that actually teach the students how to do homework. "Assume nothing..approach your students as if they don't know how to do homework." (p.29).

Homework assignments can be made more interesting by varying the type of homework. Math teachers tend to give homework that is classified as "practice." Although some such lessons may be necessary, teachers should look for ways to bring active and creative assignments to the students. "Ask kids to measure all family members' feet...or figure out how many towels, forks, or pillows their families have per head." (Burns, 1986). Looking out for geometric shapes

at home or charting the number of commercials during an hour of television can be a refreshing change (Burns, 1986).

Many teachers do not give careful thought to the problems they assign in math. Exercises that demand analysis, evaluation, and synthesis are important (Braswell, 1985). Our emphasis is often on the correct answer and not on the problem solving process. "By the time students reach seventh grade, they should be solving problems that require more than two minutes to solve." (Braswell, 1985 p.1). Students who have grown bored with drill may be more enthusiastic about lessons that require higher order thinking skills.

**Establish a district homework policy.** School districts and administrators can help support the classroom teachers in the handling of homework through a district-wide homework policy. Foyle (1986) suggests forming a homework committee of parents, administrators, and teachers. This group should then administer a homework survey to each of these three groups as a positive message that the schools care about homework. From this data, the committee can develop a homework policy which includes types of homework and approved requirements.

A homework policy should be designed to fit the needs of the specific community. The policy is most effective if it is "local in origin, derived from local demands and concerns." (Bonfiglio, 1988 p.19). One school worked by departments during an in-service day to create a document that served as a practical guide for the teachers. One

department listed why they felt homework was important and what role student, teacher, and parent should fulfill. The teachers felt the process helped them to examine what they were doing in their classes and be more productive in their teaching (Bonfiglio, 1988).

**Enlist the support of parents.** Factors that exist within the home may seem to be outside of the teacher's control. Latch-key situations, access to television, and over-scheduled family life are not things that the teacher can do much about. However, awareness of these conditions can help teachers take steps to influence the home. Parental support can be solicited early in the year with a letter home to parents (Bergstrom, 1985). Purposes for homework and procedures for handling it can be explained. Parents can be encouraged to set a special place for study and establish a set homework time. Just the fact that such a letter has been sent will help increase parental awareness. These letters home "open up avenues for communication that build a healthy, working rapport between home and school." (Bergstrom, 1985 p.80).

One middle school teacher reports being oblivious to her students' home life and frequently expressed disapproval for lack of homework (Ivey, 1988). But then she started listening to their reasons for not having work. One student said his parents were divorcing and fighting. Another one said he did not do homework because the family had to go get his brother out of jail. A third student said the electricity had been shut off at home. She decided to

arrange a study hall after school so that students would have a safe and supportive place for homework.

Other researchers have also discussed the merits of having an after-hours study period in the school setting. Lieberman (1983) suggests that students who have not been faithful in handing in homework should be assigned to the "homework room" for five consecutive days. They "earn" the privilege of doing future assignments at home as they show progress. Parental support of such after school opportunities can be solicited by the teacher through phone calls or letters. In this way, parents team up with teachers to say that homework is important. A time and place for it must be set aside someplace in the student's life.

**Help the student become better organized.** Twelve-year olds are experiencing a major transition as they enter middle school. Adjustments and organizational problems can contribute to homework problems. The current move to the middle school concept has been an effective way to address these concerns (Connors, 1991). By organizing seventh graders into "teams," an attempt has been made to create a "school within a school." Team classrooms can be located in close proximity to each other with lockers nearby. Having a smaller group of peers to relate to can help foster a "family" feeling among students and soften the impact of being thrust into a large middle school. As team teachers work together on common rules and procedures, students can be aided in developing maturity.

One way to encourage organization concerning homework is through assignment notebooks (Horner, 1987). Team teachers can work together to instruct students to record their daily assignments in each class. These notebooks can also be checked daily by parents. This provides the additional benefit of school-home communication. Some parents may wish to tie in rewards with a "contract" if all work is completed for the week (Horner, 1987). Swartz (1986) reports success within a seventh grade team with the use of what the students jokingly called their DRAB (Daily Record Assignment Book). Prior to the use of the DRABs, the students were not remembering assignments. The DRABs helped them to organize and study.

**Reward completed homework and hold students accountable.** In some classrooms homework may be assigned but never checked, collected, or commented upon. For students to take homework seriously, they need to know "that homework is important and expected and that they will be held accountable for it." (Marquis, 1989 p.423). Some students will not do homework if it is only used as a "borderline course grade factor" or if it is counted as "extra credit." Teachers should decide how much homework is worth for the total class grade and inform the students at the start of the grading period (McLean, 1986). Connors (1991) suggests that homework be counted as 25 percent of the total class grade at the middle school level. The extensive work on this subject by Walberg and associates states some impressive conclusions:

> When homework is merely assigned without feedback from teachers it appears to raise, on average, the typical student at the 50th percentile to the 60th percentile. But when it is graded or commented upon, homework appears to raise learning from the 50th to the 79th percentile. This graded-homework effect is among the largest ones discovered in educational literature (Walberg, 1985 p.76).

Some writers offer practical suggestions for handling the task of grading and reviewing the daily assignments. Levine (1991) recommends that students write on the chalkboard those math problems that they need to see solved. Other students volunteer to complete the work. This can be done routinely as students enter the classroom. Increased student involvement in the review of daily assignments was noted by the author. A similar program was used by Nadler (1987) who states that "classes become more attentive and cooperative as students take the role of the teacher." (Nadler, 1987 p.727).

One author claims to have "finally solved the age-old homework dilemma." (Ropp, 1992 p.536). This teacher assigns five points for completed assignments, one point for incomplete assignments, and a zero for no attempt. She states that "although a perfect score on a test may be difficult to achieve, a perfect homework score is possible for all students." (Ropp, 1992 p.536). Additional grade incentives beyond the grade for the homework itself might be offered. One teacher drops the lowest quiz grade and adds a grade of 100 if all homework is in for the grading period (Rutherford, 1989). One teacher created a homework lottery. Those who complete homework may put their names on small cards to drop into a box or jar for Friday's drawing.

The students soon realize that their chances of winning are greater the more times their names are placed in the jar (Partin, 1986).

Some teachers require every student to turn in a paper. If a student does not have homework, one teacher asks for the student's name and phone number to be written down (Rutherford, 1989). A call home is the natural consequence in this case. Another teacher asks for a detailed justification for no assignment (Connors, 1991). One student wrote, "Forget it, it would have been easier to do the assignment than write the reason for not having it-I will not forget tonight!" (Connors, 1991 p.66).

Stanulonis (1992) uses student scorecards as a tool for motivation. Students are aided in seeing the cause and effect relationship between their work and their grade by keeping a record of their grades in the front of their math notebook. A similar approach is noted by Kimmel (1992) who advocates use of a Grade Control Chart (GCC). The GCC is a graph on which the student charts his or her scores. Using red ink to draw two horizontal lines on the graph, each student establishes an upper and lower "zone of comfort" that they anticipate will contain their grades. A 15 unit span is suggested for this "target zone." This gives an aspect of goal setting to the project. A more capable student may set the zone at 85-100%. The lowest limit allowed would be 60-75%

In his discussion of the Grade Control Chart, Kimmel states: "I have found that increased student involvement

in grade management serves to improve the students' understanding of the (grading) process and increases the students' chance for success." (Kimmel, 1992 p.1). Students do not have to "wonder" how they are doing in class. The "visual representation of progress serves as a real motivator." (Kimmel, 1992 p.4).

Many of the solutions given in the literature were already in place with the target group. The math teacher had been seeking to vary homework assignments and present them clearly. Although the district lacked a homework policy, the team had discussed this issue and was attempting to work together on a more definite homework policy for the 135 students that they shared. A "Homework Club" was in its second year at the school. Students who needed a quiet place to study could stay one hour after school in the library on Mondays through Thursdays. The team concept was in its third year in the school. The team worked together to help students become better organized by establishing locker procedures and encouraging the use of the assignment notebooks. The math homework was graded daily in class by the students and passed forward for recording in the teacher's gradebook. Therefore, students knew their homework counted in their grades. It was felt that increasing the time and attention given to the completed homework would be useful.

Project Outcome

It had been noted that many zeros were being recorded for daily math homework assignments. It was further noted

that the same few students repeatedly failed to complete homework. Many of the solutions outlined in the literature were already being practiced with the target group. It was felt that some students did not see a connection between homework completion and their later ability to pass tests. The solution strategy called for increasing the students' awareness of homework and guiding them to take more responsibility for completion of their work. The Grade Control Chart, along with the aspect of keeping a journal, was selected as the solution strategy to help the target group increase homework awareness and performance. Therefore:

> As a result of the implementation of grade control charting during the period November 1, 1993 through December 17, 1993, the target group will increase the overall class level of homework completion to 85 percent. In addition, the students in the "low completion" category will improve to the 70 percent level.

In order to carry out this goal, the following process objectives are formulated:

> 1) Students will demonstrate ability to graph daily scores on Grade Control Charts and to write reflective comments.
> 2) As a result of the increased classroom attention to homework, students will be more aware of missing assignments and low scores.
> 3) Students will increase in awareness of math applications.

Proposal Solution Components

The researcher will assess the views of students, parents, and team teachers on the subject of homework. This will be achieved through three questionnaires to be completed prior to the intervention activity. These

questionnaires will help increase everyone's awareness of homework. For a seven week period, the target group will be asked to chart daily homework scores and keep a journal as discussed by Kimmel (1992).

Chapter 4

# ACTION PLAN FOR IMPLEMENTING THE SOLUTION STRATEGY

## Description of Problem Resolution Activities

The action plan is designed to increase students' awareness of their homework performances. After homework is corrected in class, students will be asked to graph their scores on their individual Grade Control Charts. (Appendix D) They will then use a journal to complete two brief comments: 1) a statement concerning how this math lesson might be used in everyday life or in a particular occupation, and 2) a statement reflecting how they feel about the day's performance. Students who arrive in class without homework will place the day's score at zero on their graphs. For the reflective comment, these students will state the reasons for the missing work.

The development of this action plan will begin in the summer of 1993 with the creation of questionnaires and the charting instruments. Data gathering will take place during September and October with the intervention beginning in November. The specific steps in implementing this plan are as follows:

1. Develop and prepare materials.
   A. Who: The team teacher will create the needed instruments.
   B. What: Questionnaires for team teachers, students

and parents will be written and duplicated. An existing Grade Control Chart obtained from the literature will be modified and reproduced.

C. When: This will be done in the summer of 1993.

D. Where: This will be started during an action research class and completed in the researcher's home.

E. How: The researcher will read questionnaires and the Grade Control Chart from the literature and adapt them to the needs of the target group.

F. Why: The questionnaires will be useful in collecting data during the baseline period. The Grade Control Charts will be needed when the implementation period begins.

2. Interview the other teachers on the middle school team.

A. Who: The researcher will conduct the interviews.

B. What: A questionnaire will be used to guide the discussion.

C. When: These interviews will take place in early September, 1993.

D. Where: These discussions will take place at the school site.

E. How: The researcher will ask team members to meet during their common preparation period.

F. Why: The team shares the same students. This will determine if missing homework is a team problem. Also, the literature states that school districts should have a homework policy. In the absence of a district policy, a team policy would be helpful.

3. Gather information on student perceptions of homework.
   A. Who: The researcher will obtain this data.
   B. What: A student homework questionnaire will be administered.
   C. When: The questionnaire will be given in November, 1993.
   D. Where: This will take place in the school during the regular class period.
   E. How: The teacher will distribute individual copies of the instrument.
   F. Why: The reflection needed to answer the questions will help the students focus on the role of homework in their lives and create a list of "homework excuses" which can be used for class discussion.
4. Receive feedback from parents concerning homework.
   A. Who: The researcher will be responsible for obtaining the parental feedback.
   B. What: A Parent Homework Questionnaire will be used.
   C. When: This will be given in November, 1993.
   D. Where: The questionnaires will be completed in the parents' homes.
   E. How: The forms will be mailed to the students' homes along with a stamped return envelope to insure anonymity.
   F. Why: The researcher seeks to assess parental expectations and increase parental awareness of their child's homework.

5. Collect base-line data on missing homework.
   A. Who: The researcher will collect this information.
   B. What: The number of zeros in the homework section of the gradebook will be counted.
   C. When: The zeros will be counted for a seven week period from September 13, 1993 through October 29, 1993.
   D. Where: This will be done at the school.
   E. How: Scores will be recorded daily as homework is collected. The tallying of zeros will occur after approximately twenty-five assignments have been received.
   F. The researcher seeks to record the level of the problem before the intervention is implemented.
6. Introduce concept of writing in a journal.
   A. Who: The researcher will present writing in mathematics to the students.
   B. What: Students will be keeping a math spiral notebook which contains a variety of activities to be completed in class. One activity will be to write reflective comments using proper sentence structure.
   C. When: These skills of writing and keeping journal entries will begin from the first week of school in August, 1993.
   D. Where: The journal entries will be written in class.
   E. How: The students will be required to bring their math spiral to class daily.

F. Why: In accordance with the standards established by the National Council of Teachers of Mathematics, students need to express thoughts and feelings in written form.

7. Teach graphing skills to students.

A. Who: The researcher will present graphing to the class.

B. What: Students will complete graphing assignments on a variety of topics.

C. When: These assignments will be given during the early months of the school year.

D. Where: These assignments will be completed in class.

E. How: In cooperative groups, students will gather data on various topics and translate to graphs.

F. Why: Graphing will be part of the upcoming intervention. By previous exposure to graphing, the students will more easily complete the Grade Control Charts.

8. Review percents with students.

A. Who: The researcher will review percent concepts.

B. What: The students will recall the meaning of percents. They will also solve problems finding what percent one number is of another.

C. When: Percent review will occur in September and October.

D. Where: This will take place in the mathematics classroom.

E. How: Students will be asked to translate their daily

raw scores into percents.

F. Why: This activity provides a practical use for percents. It prepares the students for the charting of percent scores during the upcoming intervention experience.

9. Explain the intervention activity to class.

A. Who: The researcher will present the project.

B. What: Each child will receive a materials packet consisting of a chart followed by several sheets of lined paper.

C. When: This material will be presented on November 1, 1993, for use during the seven week period of November 1 through December 17, 1993.

D. Where: The normal mathematics class period will be used to introduce the endeavor.

E. How: Each base group of four students will have folders with their record-keeping packets. The student designated as materials handler will pass out the charts each day and later return the folders to a box in the classroom.

F. Why: The procedure for the intervention activity will be explained so that the students will be clear on how to use the Grade Control Chart and the journal.

Methods of Assessment

The primary data collection method will be the teacher's gradebook. After the students record their scores on their personal charts, the homework papers will be passed forward for recording in the official gradebook. The

researcher will use the gradebook for counting the number of missing assignments on two occasions. The first tallying will occur on October 29 at the conclusion of the base-line data collection period. This date is also the last day of the first quarter grading period. The second opportunity for assessing homework completion will be on December 17 on the final day of the intervention. For each of the two time periods, the number of papers received will be compared to the number of possible papers to yield the percent of completed work.

A second means of assessment will be the student journals. The students will be asked to comment on the usefulness of the lessons they have been learning. They will also be asked on a daily basis to state their feelings about their own performance. On the last day of the activity, before the charts and journals are collected for the last time, students will be asked to write a longer reflection concerning the seven week intervention activity. These daily comments along with the final summary statements will be assessed to provide additional insight into the usefulness of this project.

## Chapter 5

## EVALUATION OF RESULTS AND PROCESS

### Implementation History

The terminal objectives of this project addressed the low levels of homework completion in a seventh grade mathematics classroom. Of special concern was the number of students who completed homework less than 70 percent of the time. Therefore, the terminal objectives stated:

> As a result of the implementation of grade control charting during the period November 1, 1993 through December 17, 1993, the target group will increase the overall class level of homework completion to 85 percent. In addition, the students in the "low completion" category will improve to the 70 percent level.

Preparation for the intervention occurred during the early months of the school year in the fall of 1993. The homework problem was discussed with the other teachers on the middle school team during a September team meeting. The teacher questionnaire, which was discussed in Chapter 2, was administered at this time. (Appendix A) The results indicated that the team agreed on most homework issues. The discussion that resulted from the questionnaire helped to clarify the policy on late homework.

The students needed to be exposed to several concepts and skills that would be needed for the intervention

beginning November 1. During September and October, students were occasionally asked to write reflective comments in their math spiral notebooks. This would serve as an introduction to the idea of keeping a daily journal, which the students would be asked to do during November and December. Math classes during September and October included lessons on graphing and percents. These were concepts that would be used during the upcoming intervention.

Twenty-five three-ring folders were purchased. Grade Control Charts (Appendix D) were duplicated and placed in the folders. Several sheets of lined notebook paper were added to each folder for the students' daily journal entries.

On Friday, October 29, the baseline data-collecting period came to an end. At that time, the researcher used the gradebook to determine the number of incomplete assignments. This information was summarized in Tables 1 and 2 of Chapter 2.

On November 1, the third hour mathematics class was told that they had been chosen to participate in a seven week activity on the subject of homework. A new seating arrangement was in effect on this day. The students were sitting in groups of three, rather than groups of two which had been the configuration up to that point. The individual folders were handed out. The students were permitted to look at the Grade Control Charts as the intervention was explained. A materials person was designated from each

group to pick up the group's folders from the front table at the start of each class period. Each group had a different color folder to facilitate quick distribution.

The graphing process was explained. A "sample" chart was distributed which showed a line connecting points on the graph. Students were informed that daily comments would be written on the attached notebook paper. Students would write a use for the math topic being studied and make a comment about their own performances for that day. It was stressed that students who arrived in class without their homework would mark their charts at zero for the day and write why they did not have their papers.

After the folders were examined and the intervention activity explained, the researcher asked the students to complete the Student Questionnaire. (Appendix C) The questionnaires were only partially completed by some students and needed to be re-distributed the following day. The students were admonished to give the answers careful consideration. The questionnaire was designed to motivate the students to consider the place that homework held in their lives. The results indicated that most students spent less time on homework than either the teachers or the parents desired. This questionnaire was discussed further in Chapter Two.

Two weeks into the intervention, the Parent Questionnaire was mailed to the 25 homes of the target class. A cover letter explained the class activity in which the students were currently engaged. A self-addressed,

stamped envelope was included with the questionnaire. Eleven of these were returned, as discussed in Chapter Two. The parents desired regular homework and indicated that lack of responsibility was the main reason for missing homework.

The students were eager to use the charts for the first time. On the second day that the charts were used, rulers were passed out so that the daily points could be connected to form a line graph. Some students failed to use the rulers, creating uneven lines on their graphs. After a week of using the graphs, the students were each given a 5x8 file card. This was placed in the pocket of the folder to be used as a straightedge for connecting the points. This saved the time of distributing and re-collecting the rulers.

When it came time to write the two comments in the journal, some students needed suggestions on how the day's lesson might be used. Sometimes ideas were given by other students. The graphing of the scores, the writing of the two comments, and the collection of the folders required about ten minutes each day. Often the day's lesson needed to be shortened to accommodate this activity.

Students varied on their willingness to participate in this process. Some students wanted more than the allotted time and wrote long paragraphs. These students had to be encouraged to complete their entries so that the lesson could begin for the day. Other students needed coaxing just to complete a short sentence. Some who had forgotten homework preferred to talk during this time and did not wish to write a "reason" for the missing work.

On two occasions, the researcher took pictures of each group as they plotted their scores and wrote in their journals. The students were pleased to have their pictures taken and seemed proud of their selection as the "target" class.

The students continued the graphing through November and December. On the last day of the activity, the students were asked to write a longer journal entry. They were told to express their feelings about this project and to discuss whether the activity had been useful to them. They were asked to comment on whether they would recommend that this activity be repeated in the other math classes.

Presentation and Analysis of Project Results

After the students graded their papers each day, the papers were collected for recording in the teacher's gradebook. At the close of the seven week intervention, the number of zeros were counted and compared to the number of possible papers to yield a percentage of assignments completed for the class as a whole. This total was compared to the percent of papers received during the baseline period. (Table 4) The percent of assignments completed for the class as a whole dropped from 76 percent to 71 percent during the intervention period.

Table 4

Homework Assignments Received From the Total Class During the Baseline and Intervention Periods

| | Baseline Period | Intervention Period |
|---|---|---|
| Possible Assignments | 675 | 625 |
| Assignments Received | 513 | 443 |
| Percent of Assignments Received | 76% | 71% |

In addition to examining the percents of the class as a whole, the homework completion percents were also compared for each of the 25 students for the two time periods. This information is summarized in Appendix E. Fourteen of the 25 students remained in the same "completion category" during the intervention period that they had obtained during the baseline period. Five students moved into a higher category while six students dropped into a lower completion category. (Table 5)

Table 5

Number of Students Maintaining or Changing Categories from the Baseline Period to the Intervention Period

| | |
|---|---|
| Remained in Category 1 | 8 Students |
| Dropped from Category 1 to 2 | 4 Students |
| Dropped from Category 1 to 3 | 2 Students |
| Remained in Category 2 | 0 Students |
| Moved up from Category 2 to 1 | 3 Students |
| Dropped from Category 2 to 3 | 0 Students |
| Remained in Category 3 | 6 Students |
| Moved up from Category 3 to 1 | 1 Student |
| Moved up from Category 3 to 2 | 1 Student |
| | N=25 Students |

The terminal objective required that the class as a whole move from a homework completion level of 76 percent

to 85 percent. This goal was not obtained during this intervention. Of special concern had been the number of students in the "low completion" category. These students completed homework less than 70 percent of the time. Eight students were in this category prior to the intervention. This category again contained eight students at the end of the intervention period. Therefore, the objective of raising all students to the 70 percent completion level was not achieved by this intervention project.

Although the class as a whole did not improve to the desired levels, some individuals did show positive upward movement during the intervention. Table 5 reveals that three students moved out of the medium category into the high category. Two students moved out of the low category. In addition to these five upwardly mobile students, there were also eight students who maintained their "category one" status. This means that 13 students (52 percent) either maintained high completion or improved significantly.

It is interesting to note that only three students originally fell into the "medium completion" category during the baseline period. This seems to imply that the homework habit was either well established or poorly established in this group of students. All three of these "medium level" students moved up into the "high completion" category during the intervention. Perhaps motivational tools such as the Grade Control Chart have the most influence on the average range students who needs an additional "push" to try harder.

To better understand the thinking of these three students who moved from medium to high completion, their journals were examined. The following comments were found: "I liked having this booklet because it helped me fill in some of my scores when there was a zero." "I liked doing this. I don't know why but I think I did better. It let me know what I had and what I needed to get an "A". "After keeping record of my scores for seven weeks, I feel it has helped to set more goals and made the work more challenging...I didn't like making journal entries."

Students who began with high completion and stayed in that category also wrote positive comments: "I feel that this project is helpful because it makes you want to see higher lines on the chart and some people like to have a rough idea of what their grade is...I dislike the writing part, though, because it's hard to write about a use." Another wrote: "I liked this project because it taught me how to set goals for myself. It also let me see how my grades were averaging so I would know what I need practice on to become a better student." A third successful student wrote: "I liked it when I got good grades. I don't like it when I got bad grades. It is fun to look and see what my grades were like. It made me want to bring my homework."

The reflective comments from the students who dropped in homework completion were surprisingly similar to the successful students. These "low completion" students also wrote of "liking the project." Several said the project "helped me remember my homework." One student's final

summary was very positive: "I really think it helped me think about my homework and knowing that I would have to mark a zero for that day, it made me want to do it more." However, the data for these students showed drops in completion. It seems that they understood the reasoning behind the project. However, the causes in their lives for unfinished homework were stronger than the weak "motivation" of having to write a score on a chart.

Although several students mentioned not liking the journal writing, only one student was totally negative about the entire project. His final comment was simple: "I didn't like it. It wasted class time." This student had written journal entries only twice, although he did participate in graphing scores on the chart.

Other negative thoughts about this process probably went undocumented as several journals were incomplete. In spite of the fact that the folders were collected each day and remained in the room, one journal was carried out by a student and lost during the last week of the intervention. This was a student whose completion rate began at 30 percent and dropped to 12 percent during the intervention.

## Reflections and Conclusions

It is important to take note of the school calendar when examining this project. The baseline collection period occurred in the months of September and October during the first quarter. Students arrive at school in the fall with new haircuts, new shoes, and new supplies. Entering middle school arouses both fear and excitement. Motivation is high

at this point in the school year. Open House takes place in September. Letters are sent home about parent-teacher conferences to be held at the end of the quarter. Distractions are at a minimum and many students are eager to produce in their classes.

The intervention period began November 1 on the first day of the second quarter. Previously shy seventh graders are now wise in the shortcomings of a large middle school. One can "skip" a class and perhaps not be caught. Halls are full of exciting people to see. And the penalties for a forgotten assignment are no more severe than they were in elementary school. Also, this time period brings the distractions of the Thanksgiving Holiday, the first snow, and, of course, Christmas.

The homework completion went down five percentage points during the intervention. However, the five classes taught by the researcher <u>all</u> went down in homework completion during the months of November and December. One of the other classes also had a five percentage point drop as did the target class. The other three classes showed even greater percentage point drops of 10, 10, and 16 points. Perhaps the intervention was successful in minimizing the drop for this class.

The terminal objective of having the class produce homework at the 85 percent level with all students above the 70 percent completion level was not achieved by the use of Grade Control Charting and the writing of reflective comments. However, over half of the students in the study

improved or maintained high completion rates. Many seemed to feel that this project encouraged them in that direction.

The goals set for this project were high. Although they were not attained, the importance of homework was brought into focus daily for seven weeks. Many students appeared to be positively influenced. It is assumed that the drop in homework completion would have been more pronounced if this endeavor had not occurred.

## Chapter 6

## DECISIONS ON THE FUTURE

### The Solution Strategy

The data indicate that this intervention was not successful in achieving the terminal objective as stated in Chapter Three. The recording of daily scores on a chart and the writing of daily reflections seemed to have only a modest influence on the seventh graders in encouraging them to complete and return homework.

For future implementation of Grade Control Charting, I would recommend a different chart than the one used for this project. (Appendix D) Although this chart might be suitable for the high school students for which it was designed, many of the seventh graders produced sloppy charts. The chart should contain larger sized squares for easier graphing by the younger students.

The writing of comments on a daily basis was excessive. Several students expressed displeasure at this part of the intervention. Some did not know how to phrase a "use" for the lesson. This aspect of the project was time-consuming and resulted in lost class time.

During this project, folders that contained the Grade Control Charts, as well as lined paper for the writing, were passed out daily. A more streamlined attempt at this

project would be to pass out only the enlarged Grade Control Charts. I would recommend that these charts be duplicated on colored paper for increased visibility. The students should record the day's score at the conclusion of the grading process without the added feature of writing.

Every two weeks the students could be asked to write a reflective comment on the progress observed over that time period. I feel this "occasional" reflection would be of more value than the redundant daily comments. The first reflection at the two week mark could contain a "goal-setting" comment. After four weeks, the second reflection could be an evaluation of the progress the student has made in achieving that goal. At the end of six weeks, the project should be brought to a close with a final evaluative summary reflection. Space for these three reflections could be printed on the reverse side of the Grade Control Chart.

Additional Applications

After this introductory six week activity which would be required for all students, I would suggest making additional charts available for students who wish to continue keeping track of their scores. These charts could be kept in the students' own possession and not collected daily as was done during the class-wide project. Students who found the activity helpful could continue the charting on their own.

Students often ask, "What am I getting in this class?" Some seem to remember only the good grades. Grade Control

Charting can be a "reality check" for these students. Although this project recorded only homework, some students may wish to also record test and project scores. By making charts available, students are given the power to monitor their own progress.

Recommendations

The survey of literature on the topic of homework revealed numerous suggestions for encouraging homework completion. I would recommend that classroom teachers employ a variety of ideas for improving homework. This study focused on one of these suggestions: the Grade Control Chart with the use of a journal. This tool was helpful to many students and its use is recommended.

I believe this project was most beneficial to the students in the "middle" completion category. The bright, well-organized student doesn't need this project. The troubled "at-risk" student needs much more than this modest effort. However, if this idea can be combined with additional strategies and motivation, it can be one part of an overall program to help students be successful.

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# APPENDICES

## Appendix A

### TEAM QUESTIONNAIRE ON HOMEWORK

1. How often do you assign homework to your students?

2. How much time would you expect a student to spend on the homework for your class on a given evening? For all classes?

3. Do you feel the assignment and completion of homework is a worthwhile activity for our students?

4. Are missing homework assignments a problem in your class?

5. What is your procedure for late homework? Is credit given?

6. Do we need a team homework policy?

7. What do you feel are the reasons students fail to complete homework?

8. What do you see as the purpose for homework?

9. What percent of the quarter grade in your class is determined by homework?

## Appendix B

### PARENT HOMEWORK QUESTIONNAIRE

1. How much time does your child spend on homework for all classes on an average school day?

2. Do you feel your child should be receiving regular homework assignments at the seventh grade level?

3. What do you feel is an appropriate amount of time for a seventh grader to spend on homework for all classes in one evening?

4. Have you been satisfied with the amount and type of homework your child has been receiving this year?

5. Does your child have a set time to do homework?
A set place?

6. Does your child need help in completing homework?

7. What are some reasons why your child might fail to turn in homework?

8. Do you have any comments or concerns about homework that you would like to share?

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE.

## Appendix C

### STUDENT QUESTIONNAIRE ABOUT HOMEWORK

1. How much time do you spend on homework on an average day for all your classes?

2. Do you have a certain area at home where you do your homework?

3. Do you have a set time that you do homework?

4. Does anyone help you with your homework? Who?

5. How much T.V. do you watch on a typical school night?

6. How much time do you spend on math homework?

7. Do you think homework is important to your success in math?

8. Think about those days when you have come to class without your homework? Why didn't you do it?

9. Which statement describes you? (Circle it.)

I always turn in my homework.

I usually turn in my homework.

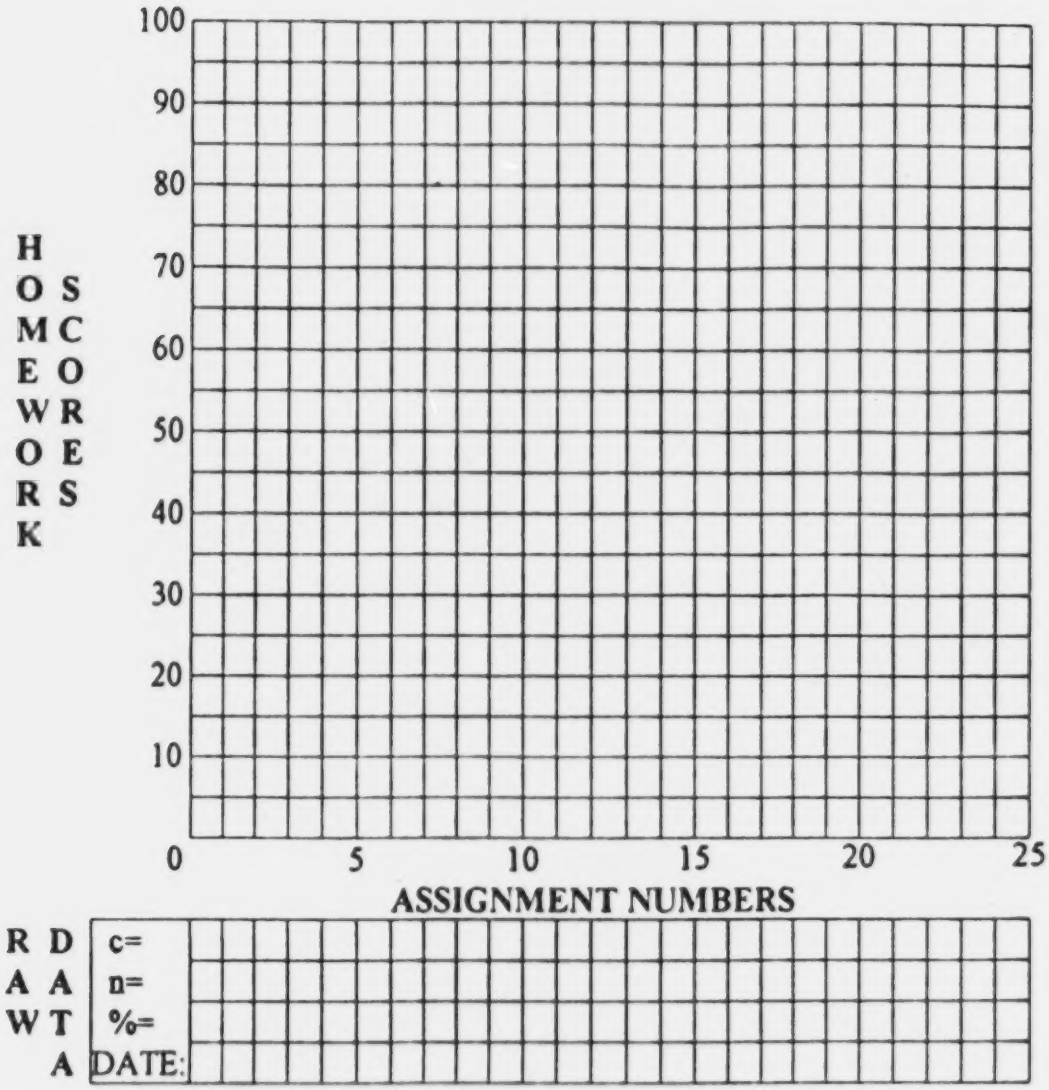
I sometimes turn in my homework.

I rarely turn in my homework.

Appendix D

NAME:_____

## GRADE CONTROL CHART




Plot your homework and test scores on the above chart. Connect the points using a ruler. If you did not bring your homework to class on a particular day, record a zero.

## Appendix E

Comparison of Homework Completion During the Baseline Period (September 13-October 29, 1993) and the Intervention Period (November 1-December 17, 1993).

Category 1: HIGH Completion, 85-100% of Assignments
Category 2: MEDIUM Completion, 70-84% of Assignments
Category 3: LOW Completion, Fewer than 70% of Assignments

| STUDENT # | BASELINE % | BASELINE Category | INTERVENTION % | INTERVENTION Category |
|---|---|---|---|---|
| 1 | 100 | 1 | 100 | 1 |
| 2 | 100 | 1 | 76 | 2 |
| 3 | 100 | 1 | 80 | 2 |
| 4 | 96 | 1 | 92 | 1 |
| 5 | 96 | 1 | 88 | 1 |
| 6 | 96 | 1 | 96 | 1 |
| 7 | 96 | 1 | 44 | 3 |
| 8 | 93 | 1 | 80 | 2 |
| 9 | 93 | 1 | 80 | 2 |
| 10 | 93 | 1 | 100 | 1 |
| 11 | 89 | 1 | 88 | 1 |
| 12 | 89 | 1 | 88 | 1 |
| 13 | 89 | 1 | 60 | 3 |
| 14 | 85 | 1 | 92 | 1 |
| 15 | 81 | 2 | 100 | 1 |
| 16 | 81 | 2 | 100 | 1 |
| 17 | 78 | 2 | 92 | 1 |
| 18 | 67 | 3 | 36 | 3 |
| 19 | 59 | 3 | 96 | 1 |
| 20 | 59 | 3 | 60 | 3 |
| 21 | 56 | 3 | 76 | 2 |
| 22 | 30 | 3 | 12 | 3 |
| 23 | 26 | 3 | 24 | 3 |
| 24 | 22 | 3 | 8 | 3 |
| 25 | 22 | 3 | 4 | 3 |

| | BASELINE | | INTERVENTION | |
|---|---|---|---|---|
| HIGH: | 14 | Students | 12 | Students |
| MEDIUM: | 3 | Students | 5 | Students |
| LOW: | 8 | Students | 8 | Students |
| | N=25 | Students | N=25 | Students |